



**Pending Claims After Entry of
Preliminary Amendment Mailed February 8, 2002**

164. A compact, high-speed United States currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

an input receptacle adapted to receive a stack of United States currency bills of a plurality of denominations to be evaluated;

two or more output receptacles adapted to receive the bills after the bills have been evaluated;

a transport mechanism adapted to transport the bills, one at a time, along a transport path from the input receptacle to the output receptacles at a rate of at least 800 bills per minute;

a discriminating unit adapted to count and denominate the bills including United States bills of a plurality of denominations at a rate of at least 800 bills per minute, the discriminating unit including a detector positioned along the transport path between the input receptacle and the output receptacles; and

a processor programmed to flag bills meeting or failing to meet any of certain non-piece count related criteria, a bill meeting or failing to meet any of the criteria being termed a flagged bill, the processor being adapted to cause the transport mechanism to halt in response to a determination that a bill meets or fails to meet at least one of the criteria.

165. The currency evaluation device of claim 164 wherein the device is adapted to deliver and at least one output receptacle is adapted to receive denominated bills of more than one denomination.

166. The currency evaluation device of claim 164 wherein the device is adapted to deliver and only one output receptacle is adapted to receive denominated bills of more than one denomination.

167. The currency evaluation device of claim 164 wherein the processor is adapted to cause the transport mechanism to halt with a bill satisfying the at least one criterion being positioned as the last bill in one of the output receptacles.

168. The currency evaluation device of claim 164 wherein the certain criteria include a criterion of the discriminating unit determining the denomination of a bill, a bill failing to meet the criterion of having its denomination determined by the discriminating unit being termed a no call bill, the processor being programmed to flag no call bills.

169. The currency evaluation device of claim 168 wherein the discriminating unit is further adapted to determine whether a bill has a denomination other than a target denomination, a bill having a denomination other than the target denomination being termed a stranger bill and wherein the certain criteria include the discriminating unit determining a bill is a stranger bill and wherein the processor is programmed to flag stranger bills.

170. The currency evaluation device of claim 169 wherein the discriminating unit is further adapted to determine whether a bill is a suspect bill and wherein the certain criteria include the discriminating unit determining a bill is a suspect bill and wherein the processor is programmed to flag suspect bills.

171. The currency evaluation device of claim 170 wherein stranger bills and no call bills are directed to a first set of one or more output receptacles and suspect bills are directed to a second set of one or more output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

172. The currency evaluation device of claim 171 wherein the first set of output receptacles includes at least two output receptacles.

173. The currency evaluation device of claim 171 wherein the processor is adapted to cause the transport mechanism to halt when a no call bill or a stranger bill is delivered to an output receptacle of the first set.

174. The currency evaluation device of claim 171 wherein the processor is adapted to cause the transport mechanism not to halt when a no call bill or a stranger bill is delivered to an output receptacle of the first set.

175. The currency evaluation device of claim 164 wherein the discriminating unit is further adapted to determine whether a bill has a denomination other than a target denomination, a bill having a denomination other than the target denomination being termed a stranger bill and wherein the certain criteria include the discriminating unit determining a bill to be a stranger bill, and wherein the processor is programmed to flag stranger bills.

176. The currency evaluation device of claim 164 wherein the discriminating unit is further adapted to determine whether a bill is suspect and wherein the certain criteria include the discriminating unit determining whether a bill is suspect, a bill determined to be suspect being termed a suspect bill and wherein the processor is programmed to flag suspect bills.

177. The currency evaluation device of claim 164 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

178. The currency evaluation device of claim 164 wherein the processor is adapted to cause the transport mechanism to halt with a bill meeting or failing to meet the at least one criterion being positioned at an identifiable location in one of the output receptacles.

179. The currency evaluation device of claim 164 wherein the processor is adapted to cause the transport mechanism to halt with a bill meeting or failing to meet the at least one criterion being located at an identifiable location within the transport mechanism.

180. The currency evaluation device of claim 164 wherein the processor is adapted to cause the transport mechanism to halt with a bill meeting or failing to meet the at least one criterion being located at a predetermined position.

181. The currency evaluation device of claim 164 wherein the certain criteria include the discriminating unit determining the denomination of a bill and wherein the processor is adapted to cause the transport mechanism to halt when a bill fails to meet a criterion of having its

denomination determined by the discriminating unit, a bill failing to meet the criterion of having its denomination determined by the discriminating unit being termed a no call bill.

182. The currency evaluation device of claim 181 wherein the processor is adapted to cause the transport mechanism to halt with a no call bill being positioned at an identifiable location in one of the output receptacles.

183. The currency evaluation device of claim 181 wherein the processor is adapted to cause the transport mechanism to halt with a no call bill being located at a predetermined position.

184. The currency evaluation device of claim 181 wherein bills meeting the certain criteria of having their denomination determined by the discriminating unit are delivered to a first set of one or more of the output receptacles and wherein no call bills are directed to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

185. The currency evaluation device of claim 184 wherein the processor is adapted to cause the transport mechanism to halt before a no call bill has been delivered to an output receptacle of the second set.

186. The currency evaluation device of claim 184 wherein the processor is adapted to cause the transport mechanism to halt after a no call bill has been delivered to an output receptacle of the second set.

187. The currency evaluation device of claim 186 wherein the processor is adapted to cause the transport mechanism to halt with a no call bill being positioned at an identifiable location in an output receptacle of the second set.

188. The currency evaluation device of claim 187 wherein the processor is adapted to cause the transport mechanism to halt with a no call bill being the last bill transported to an output receptacle of the second set.

189. The currency evaluation device of claim 164 wherein the discriminating unit is further adapted to determine whether bills are suspect and wherein the certain criteria include the discriminating unit determining a bill is suspect and wherein the processor is adapted to cause the transport mechanism to halt when a bill meets a criterion of being determined to be suspect by the discriminating unit, a bill being determined to be suspect being termed a suspect bill.

190. The currency evaluation device of claim 189 wherein bills whose denomination have been determined by the discriminating unit are delivered to a first set of one or more of the output receptacles and wherein suspect bills are directed to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

191. The currency evaluation device of claim 190 wherein the processor is adapted to cause the transport mechanism to halt after a suspect bill has been delivered to an output receptacle of the second set.

192. The currency evaluation device of claim 191 wherein the processor is adapted to cause the transport mechanism to halt with the suspect bill being positioned at an identifiable location in an output receptacle of the second set.

193. The currency evaluation device of claim 192 wherein the processor is adapted to cause the transport mechanism to halt with the suspect bill being the last bill transported to an output receptacle of the second set.

194. The currency evaluation device of claim 190 wherein bills whose denomination have not been determined by the discriminating unit are also delivered to an output receptacle of the second set.

195. The currency evaluation device of claim 194 wherein bills whose denomination have not been determined by the discriminating unit and the suspect bills are directed to different output receptacles of the second set.

196. The currency evaluation device of claim 194 wherein the processor is adapted not to halt the transport mechanism in response to the denomination of a bill not being determined.

197. The currency evaluation device of claim 190 wherein bills whose denomination have not been determined by the discriminating unit are directed to an output receptacle of the first set.

198. The currency evaluation device of claim 190 wherein the bills whose denomination have been determined and the bills whose denomination have not been determined by the discriminating unit are directed to different output receptacles of the first set.

199. The currency evaluation device of claim 164 wherein the certain criteria include the discriminating unit determining the denomination of a bill and wherein the processor is adapted to cause the transport mechanism to halt when a bill fails to meet a criterion of having its denomination determined by the discriminating unit, a bill failing to meet a criterion of having its denomination determined by the discriminating unit being termed a no call bill, and wherein the discriminating unit further determines whether bills are suspect.

200. The currency evaluation device of claim 199 wherein the processor is also adapted to cause the transport mechanism to halt when a bill meets a second criterion of being determined to be suspect by the discriminating unit.

201. The currency evaluation device of claim 200 wherein bills whose denomination have been determined by the discriminating unit are delivered to a first set of one or more of the output receptacles and wherein bills determined by the discriminating unit to be suspect and bills whose denomination have not been determined by the discriminating unit are directed to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

202. The currency evaluation device of claim 201 wherein the processor is adapted to cause the transport mechanism to halt after a no call bill or a suspect bill has been delivered to an output receptacle of the second set.

203. The currency evaluation device of claim 202 wherein the no call bills and suspect bills are delivered to different output receptacles of the second set.

204. The currency evaluation device of claim 202 wherein the processor is adapted to cause the transport mechanism to halt with the no call bill or the suspect bill being the last bill transported to an output receptacle of the second set.

205. The currency evaluation device of claim 199 wherein bills whose denomination have been determined by the discriminating unit are delivered to a first set of one or more of the output receptacles and wherein bills whose denomination have not been determined by the discriminating unit are directed to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

206. The currency evaluation device of claim 205 wherein bills determined by the discriminating unit to be suspect are also delivered to an output receptacle of the second set.

207. The currency evaluation device of claim 205 wherein bills determined by the discriminating unit to be suspect are delivered to an output receptacle of the first set.

208. The currency evaluation device of claim 164 wherein genuine bills of the plurality of United States denominations having a plurality of images associated therewith, the plurality of images defining the plurality of United States denominations and wherein the discriminating unit is adapted to distinguish among the plurality of United States denominations by scanning the image associated with each of the bills.

209. A currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

an input receptacle adapted to receive a stack of bills to be evaluated;
two or more output receptacles adapted to receive the bills after the bills have been evaluated;

a transport mechanism adapted to transport the bills, one at a time, along a transport path from the input receptacle to the output receptacles;

a discriminating unit adapted to count and denominate the bills including bills of a plurality of denominations, the discriminating unit including at least one detector positioned along the transport path between the input receptacle and the output receptacles; and

means for flagging a bill when the denomination of the bill is not determined by the discriminating unit, wherein the means for flagging is adapted to cause the transport mechanism to halt when a bill whose denomination has not been determined is encountered;

wherein the device is adapted to transport bills which have been denominated including bills of a plurality of denominations to a first set of one or more of the output receptacles.

210. The currency evaluation device of claim 209 wherein the currency bills comprise United States currency and the discriminating unit is adapted to denominate United States currency bills of a plurality of denominations.

211. The currency evaluation device of claim 209 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

212. The currency evaluation device of claim 209 wherein the currency bills of a plurality of denominations include bills of at least two of the denominations having the same dimensions.

213. The currency evaluation device of claim 209 wherein the means for flagging is adapted to cause the transport mechanism to halt with the bill whose denomination has not been determined being the last bill transported to one of the output receptacles.

214. The currency evaluation device of claim 209 wherein the device is adapted to transport bills which have not been denominated to a second set of one or more of the output

receptacles, the second set of the output receptacles being different than the first set of the output receptacles receiving bills which have been denominated.

215. The currency evaluation device of claim 214 wherein the first set and second set of the output receptacles have a stacking mechanism associated therewith and adapted to re-stack denominated bills in one of the first set of the output receptacle and re-stack bills which have not been denominated in one of the second set of the output receptacle.

216. The currency evaluation device of claim 209 wherein the detector of the discriminating unit includes a stationary optical scanning head adapted to scan at least a preselected segment of each bill transported between the input and output receptacles by the transport mechanism, and adapted to produce an output signal representing the scanned image and wherein the discriminating unit includes signal processing means adapted to receive the output signal and determine the denomination of each scanned bill.

217. The currency evaluation device of claim 209 wherein the transport mechanism is adapted to transport bills at a rate of at least about 800 bills per minute.

218. A currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

- an input receptacle adapted to receive a stack of bills to be evaluated;

- two or more output receptacles adapted to receive the bills after the bills have been evaluated;

- a transport mechanism adapted to transport the bills, one at a time, along a transport path from the input receptacle to the output receptacles;

- a discriminating unit including at least one detector positioned along the transport path between the input receptacle and output receptacle, the discriminating unit being adapted to count and determine the denomination of the bills and determine whether the bills are suspect;
- and

means for flagging a bill when the bill is determined to be suspect by the discriminating unit; wherein the means for flagging is adapted to cause the transport mechanism to halt when the discriminating unit determines that a bill is suspect.

219. The currency evaluation device of claim 218 wherein the currency bills comprise United States currency and the discriminating unit is adapted to denominate United States currency bills of a plurality of denominations.

220. The currency evaluation device of claim 218 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

221. The currency evaluation device of claim 218 wherein the means for flagging is adapted to cause the transport mechanism to halt when the discriminating unit determines that a bill is suspect with the bill which is determined to be suspect being the last bill transported to one of the output receptacles.

222. The currency evaluation device of claim 218 wherein the detector of the discriminating unit includes a stationary optical scanning head adapted to scan at least a preselected segment of each bill transported between the input and output receptacles by the transport mechanism and produce an output signal representing the scanned image, and wherein the discriminating unit includes a processor adapted to receive the output signal and determine the denomination of each scanned bill.

223. A high-speed, United States currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

an input receptacle adapted to receive a stack of bills to be evaluated;

two or more output receptacles adapted to receive the bills after the bills have been evaluated, at least one of the output receptacles being adapted to receive more than one denomination of bills;

a transport mechanism adapted to transport the bills, one at a time, along a transport path from the input receptacle to the output receptacles at a rate in excess of 800 bills per minute;

a discriminating unit adapted to count and denominate the bills including United States currency bills of a plurality of denominations at a rate in excess of 800 bills per minute, the discriminating unit including a detector positioned along the transport path between the input receptacle and the output receptacles;

a processor programmed to flag bills meeting or failing to meet any of certain non-piece count criteria, a bill meeting or failing to meet any of the criteria being termed a flagged bill; wherein the processor is adapted to cause the transport mechanism to halt in response to a determination that a bill meets or fails to meet a given one or ones of the criteria; and

wherein the processor is adapted to cause the transport mechanism to halt with a flagged bill meeting or failing to meet at least a given set of the criteria being positioned in one of the output receptacles.

224. The currency evaluation device of claim 223 wherein the processor is adapted to cause the transport mechanism to halt with a flagged bill being positioned as the last bill in one of the output receptacles.

225. The currency evaluation device of claim 223 wherein the processor is adapted to cause the transport mechanism to halt with a flagged bill being located at a predetermined position.

226. The currency evaluation device of claim 223 wherein the certain criteria include the discriminating unit determining the denomination of a bill, a bill failing to meet a criterion of having its denomination determined by the discriminating unit being termed a no call bill.

227. The currency evaluation device of claim 226 wherein the discriminating unit is further adapted to determine whether a bill has a denomination other than a target denomination, a bill having a denomination other than the target denomination being termed a stranger bill and wherein the certain criteria include the discriminating unit determining a bill is a stranger bill.

228. The currency evaluation device of claim 227 wherein no call bills are delivered to a first set of one or more of the output receptacles, and wherein stranger bills are delivered to a

second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

229. The currency evaluation device of claim 227 wherein the discriminating unit is further adapted to determine whether a bill is suspect and wherein the certain criteria include the discriminating unit determining a bill is suspect, a bill determined to be suspect being termed a suspect bill.

230. The currency evaluation device of claim 229 wherein no calls bills are delivered to a first output receptacle, wherein stranger bills are delivered to a second output receptacle, and wherein the suspect bills are delivered to a third output receptacle.

231. The currency evaluation device of claim 229 wherein the output receptacles include a third output receptacle, wherein no call bills and stranger bills are directed to the third receptacle, and suspect bills are directed to a second output receptacle.

232. The currency evaluation device of claim 231 wherein the processor is adapted to cause the transport mechanism to halt when a bill is directed to the third receptacle.

233. The currency evaluation device of claim 231 wherein the processor is adapted to cause the transport mechanism not to halt when a bill is directed to the third receptacle.

234. The currency evaluation device of claim 223 wherein the output receptacles include a third receptacle, and wherein the processor is adapted to cause the transport mechanism to deliver flagged bills to the third receptacle.

235. The currency evaluation device of claim 223 wherein the discriminating unit is further adapted to determine whether a bill has a denomination other than a target denomination, a bill having a denomination other than the target denomination being termed a stranger bill and wherein the certain criteria include the discriminating unit determining a bill is a stranger bill.

236. The currency evaluation device of claim 223 wherein the discriminating unit is further adapted to determine whether a bill is suspect and wherein the certain criteria include the discriminating unit determining a bill is suspect, a bill determined to be suspect being termed a suspect bill.

237. The currency evaluation device of claim 223 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

238. The currency evaluation device of claim 223 wherein bills of at least two of the denominations have the same dimensions.

239. The currency evaluation device of claim 223 wherein genuine bills of the plurality of denominations having a plurality of images associated therewith, the plurality of images defining the plurality of denominations and wherein the discriminating unit is adapted to distinguish among the plurality of denominations by scanning the image associated with each of the bills.

240. A currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

an input receptacle positioned to receive a stack of bills to be evaluated;

two or more output receptacles positioned to receive the bills after the bills have been evaluated;

a transport mechanism comprising a transport drive motor and transport rollers, the transport mechanism located between the input receptacle and the output receptacles to transport the bills, one at a time, from the input receptacle to the output receptacles along a transport path;

a discriminating unit comprising a processor and at least one detector positioned along the transport path between the input receptacle and the output receptacles, the detector being adapted to generate a characteristic information output signal in response to detected characteristic information, the characteristic information output signal being electrically coupled to the processor, the processor being adapted to receive the characteristic information output signal and generate a denomination signal in response thereto; and

a flagging device comprising a processor and an encoder linked to the transport mechanism, the encoder being adapted to produce tracking signals in response to the physical movement of the bills, the processor being adapted to generate a no call signal when the denomination of a bill is not determined by the processor; wherein the flagging device is adapted to generate a stopping signal in response to the no call signal and wherein the transport drive motor is adapted to stop in response to the stopping signal; and

wherein the device is adapted to transport bills which have been denominated to a first set of one or more of the output receptacles.

241. The currency evaluation device of claim 240 wherein the currency bills comprise United States currency and the discriminating unit is adapted to denominate United States currency bills of a plurality of denominations.

242. The currency evaluation device of claim 240 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

243. The currency evaluation device of claim 240 wherein the flagging device is adapted to cause the transport mechanism to stop with the bill whose denomination has not been determined being the last bill transported to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

244. The currency evaluation device of claim 240 wherein the device is adapted to transport bills which have not been denominated to a second set of one or more of the output receptacles, the output receptacles of the second set being different from the output receptacles of the first set.

245. The currency evaluation device of claim 244 wherein the first set and second set of the output receptacles have a stacking mechanism associated therewith and which is adapted to re-stack denominated bills in one of the first set of the output receptacle and re-stack bills which have not been denominated in one of the second set of the output receptacle.

246. The currency evaluation device of claim 240 further comprising a memory and wherein the processor is adapted to generate a scanned pattern from each of the bills based on the characteristic information output signal and determine the denomination of a bill by comparing the scanned pattern generated from the bill with master patterns associated with different denominations of bills, the master patterns being stored in the memory.

247. The currency evaluation device of claim 246 wherein the detector comprises an optical scanhead and wherein the scanned and master patterns comprise optical patterns.

248. The currency evaluation device of claim 247 wherein the processor is adapted to correlate the scanned pattern generated from the bill with master patterns associated with different denominations of bills and determine the denomination of the bill if the scanned pattern sufficiently correlates with one of the master patterns.

249. The currency evaluation device of claim 240 wherein the discriminating unit is adapted to denominate currency bills of a plurality of denominations, bills of at least two of the denominations having the same dimensions.

250. The currency evaluation device of claim 240 wherein the discriminating unit is adapted to denominate currency bills of a plurality of denominations, genuine bills of the plurality of denominations having a plurality of images associated therewith, the plurality of images defining the plurality of denominations and wherein the discriminating unit is adapted to distinguish among the plurality of denominations by scanning the image associated with each of the bills.

251. A currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:
an input receptacle positioned to receive a stack of bills to be evaluated;
two or more output receptacles positioned to receive the bills after the bills have been evaluated;

a transport mechanism comprising a transport drive motor and transport rollers, the transport mechanism located between the input receptacle and the output receptacle to transport the bills, one at a time, from the input receptacle to the output receptacles along a transport path;

a discriminating unit comprising a detector positioned along the transport path between the input receptacle and the output receptacle and comprising a processor, the detector generating a characteristic information output signal in response to detected characteristic information, the characteristic information output signal being electrically coupled to the processor, the processor being adapted to receive the characteristic information output signal and generate a denomination signal in response thereto; the processor also being adapted to generate a suspect signal when a bill is determined to be suspect by the processor, and

a flagging device comprising a processor and an encoder linked to the transport mechanism, the encoder producing tracking signals in response to the physical movement of the bills; wherein the flagging device is adapted to generate a stopping signal in response to the suspect signal and wherein the transport drive motor is adapted to stop in response to the stopping signal.

252. The currency evaluation device of claim 251 wherein the input receptacle is adapted to receive and the processor is adapted to denominate bills of a plurality of United States denominations.

253. The currency evaluation device of claim 251 wherein the processor is adapted to denominate currency bills independently of the size of the bills.

254. The currency evaluation device of claim 251 wherein the processor is adapted to denominate currency bills of a plurality of denominations, bills of at least two of the denominations having the same dimensions.

255. The currency evaluation device of claim 251 wherein the processor is adapted to denominate currency bills of a plurality of denominations, genuine bills of the plurality of denominations having a plurality of images associated therewith, the plurality of images defining

the plurality of denominations and wherein the processor is adapted to distinguish among the plurality of denominations by scanning the image associated with each of the bills.

256. A currency evaluation device for receiving a stack of currency bills and rapidly evaluating all the bills in the stack, the device comprising:

an input receptacle adapted to receive a stack of bills to be evaluated;

two or more output receptacles adapted to receive the bills after the bills have been evaluated;

a transport mechanism adapted to transport the bills, one at a time, along a transport path from the input receptacle to the output receptacles;

a discriminating unit adapted to count and denominate the bills, the discriminating unit including a detector positioned along the transport path between the input receptacle and the output receptacles; and

a processor programmed to cause the transport mechanism to halt in a predetermined manner in response to a determination that a bill meets a stranger bill criterion and in response to a determination that a bill meets a no call bill criterion, and wherein a bill which meets the stranger bill criterion is termed a stranger bill, and wherein a bill which meets the no call bill criterion is termed a no call bill.

257. The currency evaluation device of claim 256 wherein the currency bills comprise United States currency and the discriminating unit is adapted to denominate United States currency bills of a plurality of denominations.

258. The currency evaluation device of claim 256 wherein the discriminating unit is adapted to denominate the bills independent of the size of the bills.

259. The currency evaluation device of claim 256 wherein the transport mechanism is adapted to transport and the discriminating unit is adapted to denominate bills at a rate in excess of 800 bills per minute.

260. The currency evaluation device of claim 256 wherein the device is adapted to permit manual removal of a no call or a stranger bill after the transport mechanism has halted.

261. The currency evaluation device of claim 260 further comprising a key adapted to restart the operation of the device after the transport mechanism has halted.